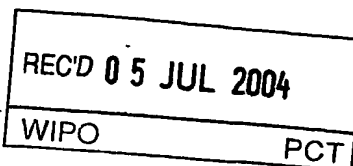


PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference 1304.P005PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/SG 2003/000079	International filing date (<i>day/month/year</i>) 11 April 2003 (11.04.2003)	Priority Date (<i>day/month/year</i>) 16 April 2002 (16.04.2002)
International Patent Classification (IPC) or national classification and IPC IPC⁷: C02F 3/30, 3/34		
Applicant NANYANG TECHNOLOGICAL UNIVERSITY		

1. This international preliminary examination report has been prepared by this International Preliminary Examination Authority and is transmitted to the applicant according to Article 36.																	
2. This REPORT consists of a total of <u> 4 </u> sheets, including this cover sheet. <input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of <u> </u> sheets.																	
3. This report contains indications relating to the following items: <table style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 5%;">I.</td> <td><input checked="" type="checkbox"/> Basis of the opinion</td> </tr> <tr> <td>II.</td> <td><input type="checkbox"/> Priority</td> </tr> <tr> <td>III.</td> <td><input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td>IV.</td> <td><input type="checkbox"/> Lack of unity of invention</td> </tr> <tr> <td>V.</td> <td><input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td>VI.</td> <td><input type="checkbox"/> Certain documents cited</td> </tr> <tr> <td>VII.</td> <td><input type="checkbox"/> Certain defects in the international application</td> </tr> <tr> <td>VIII.</td> <td><input type="checkbox"/> Certain observations on the international application</td> </tr> </table>		I.	<input checked="" type="checkbox"/> Basis of the opinion	II.	<input type="checkbox"/> Priority	III.	<input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	IV.	<input type="checkbox"/> Lack of unity of invention	V.	<input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	VI.	<input type="checkbox"/> Certain documents cited	VII.	<input type="checkbox"/> Certain defects in the international application	VIII.	<input type="checkbox"/> Certain observations on the international application
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Date of submission of the demand <div style="text-align: center;">16.10.2003</div>	Date of completion of this report <div style="text-align: center;">3 June 2004 (03.06.2004)</div>
Name and mailing address of the IPEA/AT Austrian Patent Office Dresdner Straße 87 A-1200 Vienna Facsimile No. 1/53424/200	Authorized officer <div style="text-align: center;">KOLLER G.</div> Telephone No. 1/53424/458

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SG 03/00079-0

I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed

☐ the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____.

☐ the claims:

pages _____, as originally filed

pages _____, as amended (together with any statement) under Article 19

pages _____, filed with the demand

pages _____, filed with the letter of _____.

☐ the drawings:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____.

☐ the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____.

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in printed form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____.

☐ the claims, Nos. _____.

☐ the drawings, sheets/fig _____.

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as „originally filed“ and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/SG 03/00079-0

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement	Novelty (N)	Claims 1-19	YES
		Claims ----	NO
Inventive step (IS)		Claims 1-19	YES
		Claims ----	NO
Industrial applicability (IA)		Claims 1-19	YES
		Claims ----	NO

Citations and explanations (Rule 70.7)

The following documents have been cited in the Search Report:

D1: WO 98/49106 A1
D2: EP 0301924 A2
D3: JP 52 130150 A

The subject matter of the present application is a method for removing or reducing the level of certain chemical species in a sample (eg. waste water, water, soil) which comprises subjecting said sample to anaerobic and/or aerobic treatment conditions wherein the valency of one or more redox mediator species is manipulated by microorganisms resulting in adsorption, precipitation, aggregation, flotation, or flocculation of the chemical species.

Redox mediator species, chemical species and the microorganisms are characterized in the depending claims.

From document D1 the bioremediation of mixed waste based on a treatment using iron of zero-valency in presence of hydrogenotrophic microorganisms which are exemplified. Document D2 discloses a water treatment process characterized by iron contactor(s) which are immersed in the water in the presence of sulfate reducing bacteria where iron ions are forced to elute into the water under aerobic and anaerobic conditions thereby precipitating phosphorus as insoluble iron phosphate. Document D3 teaches the elimination of nitrite and/or nitrate from waste material by denitrification bacteria adhered to a resin.

Accordingly, the documents D1 to D3 cited in the search report represent interesting contributions to the state of the art and are not considered to be of particular relevance concerning the subject matter of the present application. Consequently, the present application complies with the requirements of Article 33(2) – novelty – and Article 33(3) – inventiveness.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Box V (page 1)

Industrial applicability is given.